1. A sensor for detecting an analyte, said sensor comprising:

a core comprising hydrogel;

fluorescence reagent disposed in the core;

a semipermeable coating surrounding the core, the semipermeable coating comprising a polydisperse polymer having a molecular weight from about 4 kDa to about 18 kDa and a polydispersity index greater than 1; and

a biocompatible coating surrounding the semipermeable coating.

2. The sensor of claim 1, wherein the polydisperse polymer has a molecular weight from about 8 kDa to about 12 kDa.

3. The sensor of claim 1, wherein the polydisperse polymer has a molecular weight from from about 9 kDa to about 10 kDa.

4. The sensor of claim 1, wherein the fluorescence reagent is mobile in the core.

5. The sensor of claim 1, wherein the polydisperse polymer has a polydispersity index from greater than 1 to about 1.5.

6. The sensor of claim 1, wherein the polydisperse polymer comprises polylysine.

7. The sensor of claim 1, having a diameter greater than 1 mm.

8. The sensor of claim 1, having a diameter of at least 1.25 mm.

9. The sensor of claim 1, having a diameter of at least 1.5 mm.

10. The sensor of claim 1, having a diameter no greater than 3 mm.

11. The sensor of claim 1, having a diameter no greater than 2.5 mm.

12. The sensor of claim 1, wherein the analyte comprises glucose.

13. The sensor of claim 1, wherein said sensor is capable of detecting the analyte based on nonradiative fluorescence resonance energy transfer.

14. The sensor of claim 1, wherein the fluorescence reagent comprises an energy acceptor and an energy donor.

15. The sensor of claim 1, wherein the fluorescence reagent is selected from the group consisting of carbocyanine dyes, sulfonated aminocourmarin dyes, sulfonated rhodamine dyes, and combinations thereof.

16. The sensor of claim 1, wherein the fluorescence reagent comprises glucose binding protein and a glycosylated substrate.

17. The sensor of claim 16, wherein the glucose binding protein comprises concanavalin A and the substrate comprises human serum albumin.

18. The sensor of claim 1, wherein the fluorescence reagent comprises a first carbocyanine dye having an excitation maximum at 581 nm and an emission maximum at 596 nm, concanavalin A, a second carbocyanine dye having an excitation maxima at 675 nm and an emission maxima at 694 nm, and human serum albumin.

19. The sensor of claim 18, wherein said concanavalin A comprises recombinant concanavalin A.

20. The sensor of claim 18, wherein the molar ratio of the first carbocyanine dye to concanavalin A is from about 0.1 to about 0.4.

21. The sensor of claim 18, wherein the molar ratio of the first carbocyanine dye to concanavalin A is 0.2.

22. The sensor of claim 18, wherein the molar ratio of the second carbocyanine dye to human serum albumin is from about 0.5 to about 0.9.

23. The sensor of claim 14, wherein the human serum albumin is glycoslyated and the molar ratio of glucose to human serum albumin is from about 7 to about 12.

24. The sensor of claim 1, wherein the fluorescence reagent comprises a first dye having an excitation maxima at about 578 nm and an emission maxima at about 603 nm, concanavalin A, a second dye having an excitation maxima at about 650 nm and an emission maxima at about 665 nm, and human serum albumin.

25. A method of making a sensor comprising contacting droplets of a first aqueous alginate composition with an ionic solution comprising at least 100 mM Group II cations to form a core comprising crosslinked gel, said first aqueous alginate composition comprising a 1:1 dilution of a stock composition comprising at least 1 % weight/volume alginate and having a viscosity of at least 1700 centipoises at about 25°C.

26. The method of claim 25, wherein said ions comprise barium ions, calcium ions or a combination thereof.

27. The method of claim 25, wherein said first aqueous alginate composition comprises from about 1 % weight/volume to about 10 % weight/volume alginate.

28. The method of claim 25, wherein said alginate composition comprises from about 1 % weight/volume to about 3 % weight/volume alginate.

29. The method of claim 25, wherein said stock composition has a viscosity from about 1700 cps to about 2000 cps at about 25°C.

30. The method of claim 25, wherein said ionic solution comprises from about 100 mM cations to about 300 mM cations.

31. The method of claim 25, further comprising coating said core with a composition comprising polydisperse polymer having a polydispersity index greater than 1.

32. The method of claim 25, further comprising coating said core with a composition comprising polydisperse polymer having a polydispersity index from greater than 1 to about 1.5.

33. The method of claim 31, further comprising coating said polydisperse polymer coating with a biocompatible composition.

34. The method of claim 23, further comprising contacting said core with a composition comprising a fluorescence reagent.

35. The method of claim 25, wherein said aqueous alginate composition comprises a fluorescence reagent.

36. The method of claim 35, wherein the fluorescence reagent comprises an energy donor and an energy acceptor.

37. The method of claim 35, wherein the fluorescence reagent comprises glucose binding protein and a glycosylated substrate.

38. The method of claim 37, wherein the glucose binding protein comprises concanavalin A and the glycosylated substrate comprises human serum albumin.

39. The method of claim 35, wherein the fluorescence reagent is selected from the group consisting of carbocyanine dyes, sulfonated aminocourmarin dyes, sulfonated rhodamine dyes, and combinations thereof.

40. The method of claim 35, wherein the fluorescence reagent comprises a first carbocyanine dye having an excitation maximum at 581 nm and an emission maximum at 596 nm, concanavalin A, a second carbocyanine dye having an excitation maxima at 675 nm and an emission maxima at 694 nm, and human serum albumin.

41. The method of claim 40, wherein the molar ratio of the first carbocyanine dye to concanavalin A is from about 0.1 to about 0.4.

42 The method of claim 40, wherein the molar ratio of the first carbocyanine dye to concanavalin A is 0.2.

43. The method of claim 40, wherein the molar ratio of the second carbocyanine dye to human serum albumin is from about 0.5 to about 0.9.

44. The method of claim 37, wherein the glucose binding protein comprises concanavalin A and the glycosylated substrate comprises human serum albumin.

45. The method of claim 37, wherein the human serum albumin is glycoslyated and the molar ratio of glucose to human serum albumin is from about 7 to about 12.

47. The method of claim 35, wherein the fluorescence reagent comprises a first dye having an excitation maxima at about 578 nm and an emission maxima at about 603 nm, concanavalin A, a second dye having an excitation maxima at about 650 nm and an emission maxima at about 665 nm, and human serum albumin.

48. The sensor of claim 1, wherein the sensor exhibits less 1 mole % leakage of its fluorescence reagent when stored for two weeks at 37°C in pH 7.4 10 mM HEPES/0.15 M saline solution.

49. A sensor for detecting an analyte, said sensor comprising:

a core comprising a polymer matrix;

fluorescence reagent disposed in the core;

a semipermeable coating surrounding the core, the semipermeable coating comprising a polydisperse polymer; and

a biocompatible coating surrounding the semipermeable coating,

the sensor exhibiting less than 1 mole % leakage of the fluorescence reagent when stored for two weeks at 37°C in pH 7.4 10 mM HEPES/0.15 M saline solution.